"Mental Tests" for Shepherd Dogs

By

Elliott S. Humphrey.

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HOUSE FOR THE BLIND

EYES FOR THE BLIND

Frontispiece

Dogs have been used as guides for the blind for a long time but the scientific selection and training of dogs for this purpose has only recently been undertaken. This picture shows one of the trained dogs guiding her blind master across a street, waiting between two automobiles for a clear road ahead. This is the only work in which the dog gives the command and the man obeys. Only exceptional dogs can be trained to do this highly specialized work. The selection and training of "eyes for

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IN THIS ISSUE

ORIGINAL ARTICLES

MENTAL TESTS FOR SHEPHERD DOGS
By Elliott S. Humphrey 129

MENTAL AND PHYSICAL TRAITS OF IDENTICAL TWINS REARED APART
By H. H. Newman 137

ALBINOTIC DILUTION OF COLOR IN CATTLE
By L. J. Cole, E. E. Van Lone and Ivar Johansson 145

A METHOD OF MAKING WHEAT CROSSES
By V. H. Florell 157

THE RELATIVE ABILITY OF MEN AND WOMEN
By T. D. A. Cockerell 163

INHERITANCE OF A LEAF VARIEGATION IN THE COMMON BEAN
By M. C. Parker 165

KINKY TAIL IN SWINE
By Julius E. Nordby 171

BRIEF REVIEWS AND NOTES

THE BORDERLANDS OF SCIENCE 143

ITALIAN STATISTICS 144

BOOKS RECEIVED 161

EVOLUTION AND GENETICS 162

SOCIAL LEGISLATION IN PANAMA 164

COMING

A Herd of Cattle Inbred 20 Years

A breeding system that has conserved the merits of a chosen sire without close inbreeding, and with very satisfactory results.

●

Soda Straws for Plant Pollinators

A new technique of hybridization that offers great advantages in hybridizing certain types of plants.

●

"Taste Blindness" and Race

Racial differences in distribution of "Tasters" and "non-Tasters" gives this test possible value in tracing the migrations and interrelations of races.

●

Twisted Wheat and Twisted Trees

Experimental facts about one form of twisted growth may throw light on a moot question which has been the subject of no little speculation.

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"MENTAL TESTS" FOR SHEPHERD DOGS

An Attempted Classification and Evaluation of the Various Traits that go to Make Up "Temperament" in the German Shepherd Dog

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THIS article may have little direct value to genetics but it is hoped that it will prove a help to others engaged in studies of the inheritance of mental and emotional characteristics. In 1924 at Fortunate Fields, above Vevey, Switzerland, a research problem was started dealing with inheritance in the German Shepherd dog as one of its angles. We were especially interested in the inheritance of mental and behavior traits. As a scale for measuring such traits we had to do a good deal of studying along the lines of dog education; and then to utilize the dogs so educated, we had to make still another study of the possible economic uses of the dog in the modern pattern of life.

At the time the experiment was started we accepted the theory of dog breeders that the best working dog was the most "intelligent" dog. That word is quoted as we are using it in the sense that dog breeders used it then and still use it. They are not using the word in the dictionary sense nor in the psychological sense but rather to express "ability to do the master's will to the master's satisfaction." In order that we might have a better understanding of our problem we spent some time in Germany studying the breed at home and trying to find out what dogs the German breeders, trainers and users of the breed considered "intelligent" from the standpoint of this last meaning.

The sum total of what we found out was that the Germans considered that a dog of good "temperament" would be able to work whereas a dog of poor "temperament" was useless and that the better the temperament the better the quality of the dog's work. The German breeders and trainers themselves used either the word "Temperament" or "Wesen" but had no way to break down either word except to explain that with experience one "knew" temperament as good or bad, as suitable or unsuitable.

With this as basic information our first records were necessarily limited to "good temperament" if the dog worked or "bad temperament" if the dog did not prove equal to the task. Coupled with these records we kept notes as completely as possible on all points of the dogs' education and on all behavior characteristics. Soon the collective noun "temperament" commenced to break up and we could see some of its parts which had an influence on whether the dog learned or not and whether he was capable of his job or not.

Once the break-up started, and we commenced to keep closer records on the various parts, we thought we were on our way. We were—to learning some of our false guesses. The breaking up was into both mental and physical traits which influenced learning and actions. Since then we have found that some of our so-thought physical traits were mental and some of the so-thought mental traits were physical. As examples: the trotting gait of the Shepherd varies all the way from a high-actioned, short trot to a long, low sweeping trot. We figured the difference wholly physical—a result of structure. Then we happened to notice that the same dog might exhibit degrees toward either extreme, according to the environment at the moment. On closer study we found that one and the same dog would have a shorter, higher trot when he was sure of his surroundings or at play with smaller dogs while if he were on leash with a trainer whom he slightly feared or if in the presence of dogs which he thoroughly

"HANGING" A PHYSICAL NOT A PSYCHOLOGICAL CHARACTERISTIC

Figure 1

These views from two movie strips serve as a time table of a high jump made by two dogs—a "non-hanger" and a "hanger." In the first two columns are shown corresponding "frames" from each of the strips; that is, the same number of exposures was omitted between each of the views. Note that after the "hanger" reaches the top of the jump he remains in virtually the same position all through the second series of photographs. At the top of the third column the "non-hanger" is just reaching the ground and the "hanger" is about to begin his descent. In order to compare the differences in taking up the shock of landing, twenty-five frames have been omitted from the strip showing the "hanger." Beyond this point the two series include all of the pictures,—that is, none of the frames are omitted. Note that the hanger lands with his four feet solidly on the ground and that his nose actually touches the ground. The non-hanger throws his hind legs very much farther forward so that they touch the ground in advance of his front legs. He keeps his nose clear of the ground. The difference between the two dogs proves to be not a psychological characteristic but a difference in [illegible] of their shoulder blades, which prevents the hanger from absorbing the

respected the trot became lower and longer. After further experimentation this "physical trait" dissolved, partially at least, into a mental trait as it became a manifestation of one type of fear.

An example of the opposite type of error occurred in our classification of some dogs as "hangers," which we considered to be a mental behavior trait. These dogs did not jump their high jumps as did the non-hangers. The ordinary dog takes a running jump at a fence of say 6½ or 7 feet, hits it about five feet up, crawls to the top and then jumps down the other side at once. Such are the non-hangers. The hangers do the same until the top is reached. Then there is a definite pause or hang before jumping down, a pause which may lengthen and necessitate a command to come down from the top of the jump. This trait seemed to run in families, especially family No. 4 and a section of No. 7 so we felt pretty sure that this was not only a definite mental-behavior trait but also that it was an inherited trait. Then came the time when we were taking some slow movies for a different purpose. Included were some jumping pictures and quite by accident these included both hangers and non-hangers. What was our surprise to see in the slowed-up action of the movies that the non-hangers hit the ground with their front feet, took up the jar and, letting their hind feet pass well ahead, straightened out into a run whereas the hangers hit the ground in the same position but failed to take up the jar in the same way. The spring was not there; their noses bumped the ground hard; their hindquarters were thrown out of balance and hit to the side and they almost rolled into a running position to get away. This bump was so fast that we had failed to see it in the normal speed of action. Then followed a re-study of our hangers and non-hangers and we found that the hangers without exception were dogs straight in shoulder structure as compared with the lesser angles of the shoulders of the non-hangers. So one more trait shifted around and our mental-behavior trait became a physical trait.

THE HIGH JUMP
Figure 2

When jumping over an obstacle more than three and one-half feet high the dog hits the jump with all four feet, pulls himself over with his front feet. The "hanging" characteristic is evident when the dog arrives at the top of the jump. There the hanger stays for an appreciable time while the non-hanger completes the jump without hesitation. See Figure 1.

In this way, almost a trial and error method, we came to our present partial list of the characteristics which go to make up our original "Temperament"—the German "Wesen." These include:

Body sensitivity	Willingness
Ear sensitivity	Energy
Nose ability	Self-right
Intelligence	Confidence

(Courage seems to be a function of self-right and confidence and perhaps experience.)

Sharpness	Initiative
Fighting instinct	Affection
Protection instinct	Wildness-tameness
Alertness	"Apport"
Curiosity	Jealousy
Attentiveness	

While we recognize all of the above at this time we have not, in all cases, devised methods of judging them nor scoring them. The first eleven we can score fairly well. The next eight we know as characteristics but have not yet a satisfactory method of scoring. The next to the last characteristic, "Apport," is a characteristic which seems definitely limited to certain families but our data are too limited to be discussed.

The Terms Defined

It might be interesting to know what we mean by the first eleven terms as they are not wholly self-explanatory. These terms are words we have fitted to our understanding but which do not always accord with the dictionary meaning.

Sensitivity, body and ear. When all theory has been put aside and we finally come to practical results the instructor of a dog must rely on two methods of giving reward or correction, the one is by word and the other by touch. We have had no direct way in which we could test the actual sensitivity of the body covering nor of the hearing of our dogs, but in all instruction the teachers quickly get a very accurate judgment on the dog's responses to verbal or manual caresses or corrections. The ratings we have given the dogs have been based, therefore, on the pleasure or fear responses shown rather than on actual measured sensitivities. In scoring these two characteristics we have taken such training evidence into consideration and if the dog showed no response to sound, for example, though we knew from his reaction to a jingling feed pan in the distance that he was not deaf he was scored 1, some reaction scored 2, normal attention and normal reaction scored 3, fear of the sound but willingness to be assured by his friend the instructor scored 4, whereas uncontrollable fear, trembling or unreasonable attempt at flight was scored 5. The same scale was used for body sensitivity. From a practical standpoint the dog must have some sensitivity if his instructor is to be able to "reach" the pupil with the rewards and corrections necessary to animal learning.

Nose ability does not really mean olfactory acuity in the strict sense of the term. It might, perhaps, be better termed "trailing willingness." All dogs seem to have sufficient olfactory acuity for any work that they will be called to do. Many of them, however, are not willing to utilize this sense for solving a man-made problem. Dogs which learned to utilize their nose ability for trailing purposes, which showed the smallest percentage of error and dogs which would tell by their actions whether they were sure or unsure of their work, were scored 1. The same scale of five was used, with the score of 5 applied to dogs which would utilize their noses only for their own ends and in no form for their masters, except to hunt their own master.

Intelligence is also scored one to five. The basis of training judgment on this point is the readiness with which a dog learns and the extent to which it retains and uses what it has learned. It should not be assumed that judgment is based on the willingness of the dog to do its master's wish. Certain dogs learn very readily but are extremely difficult to instruct. They learn how to avoid doing what is wanted and then utilize what they have learned. If a dog exhibits a like amount of brain work in avoiding obedience it is scored as high for intelligence as though it had used the same amount of brain work to carry out the command given.

Willingness is a term which most psychologists will say is "hooey," but which is one of the easiest characteristics for the instructors to score.

Some dogs are constantly trying to do what their masters wish and others are as constantly trying to avoid the same thing. The dog which is always trying to "get" his master's wish and carry it out, especially with learned action, is credited 1 for willingness. The dog which knows what is wanted but always needs the threat of a verbal or manual correction to carry out that wish is marked 5 for willingness.

Energy indicates the spontaneous activity of the animal. The animal always on the move is scored 1 whereas the "lounge-lizard" which always seeks a place in the sun or the shade and then lies down is scored 5.

Self-right was the only term we could think of for the characteristic we classify under this head. It seems to be the feeling of a "right to be right here." The dog which has it holds his position regardless of what comes up to him whereas the dog which lacks it moves to the side to let the other pass. There is nothing of fear in this sideways movement—just an indication that the dog feels the other has the right of way. This characteristic is hard to describe and many terms have been suggested of which perhaps the best single word is "sovereignity." Once the characteristic has been pointed out and understood, however, it is easy to see and becomes a real characteristic—just as plain and just as full of meaning as the word "quality" which every livestock breeder uses but finds trouble in explaining. Originally we scored "self-right" on a 1 to 5 scale with the extreme feeling of self-right scored 1 and the dog which always gives way to others, human or canine scored 5. As the ideal for this characteristic was the midpoint with either extreme undesirable in the ordinary dog, we then changed the scale to read both ways from an ideal of 1, up to plus five for extreme expression and down to minus five for extreme lack of quality. The same plus and minus scale from an ideal of 1 was also adopted for the qualities of sharpness, fighting instinct and protective instinct.

"FIGHTING INSTINCT" AND "SELF RIGHT"

Figure 3

This picture while not of dogs, illustrates better than any dog picture available two traits discussed in this article. The horse at the left displaying the fighting instinct is quite in contrast to the horse at the right which, without aggression, is nevertheless fully intending to maintain his position in spite of the aggressive attitude of his neighbor.

Confidence is an entirely different thing from self-right. The dog may have all the self-right in the world and yet have a mistrust of strangers. The dog which scores 1 for confidence goes up to any stranger on sight and makes friends. A "4" dog will not make up to a stranger if the stranger tries to make the advance but if the stranger says nothing and pays no attention to the dog the dog will come up, smell, and in ten minutes be making friends on his own. The 5 score for confidence is given the dog which simply will not make friends nor approach strangers unless a period of days is given during which he may become assured that the other is going to be good company.

Sharpness has a scoring system of 1

"NOSE" AND "RESPONSIBILITY"

Figure 4

Above, Omar Fortunate Fields illustrating "nose." The dog must take the initiative in trailing and the long lead is used not to influence him but to keep him from trailing too fast and to keep him near enough to his master so that the latter may see each clew indicated by the dog. "Responsibility" (below) must be displayed by a dog which is to perform satisfactorily in the absence of his master. In this instance Owl Fortunate Fields is guarding a prisoner. He makes no move unless the prisoner attempts to escape, in which case the dog stops him but releases his hold the moment the prisoner [illegible]. A dog which lacks an inherent ability to display responsibility

for a neutral condition plus 5 for the extreme in sharpness and minus 5 for the extreme in lack of sharpness, making a total range of nine points. Sharpness is strictly speaking the willingness to bite a human being. The dog which would not bite unless forced to is scored 1. Ranging upward from this we find dogs which need less and less provocation to bite and they are put on the plus side whereas the dogs which need more and more provocation are put on the minus side down to the dog which we cannot teach to bite a human being. Note that we have said *human,* for some dogs which score a minus 5 in sharpness score high in fighting which is biting those of their own kind.

Fighting, as indicated, is the desire to fight others of their own kind. It also is on a plus and minus score with 1 the center, the dog which will not seek nor avoid a fight. The dog which is always hunting a fight is plus 5 and the dog which will never meet a fight is minus 5. The same system of scoring is used for the instinct of protecting a human master. Some dogs have it in a plus 5 degree and are really a nuisance if any friends or visitors come around, others cannot be taught to protect a master, no matter how much they think of him and so fall into the minus 5 class.

Good Temperament

So much for the various characteristics. Now what do we mean by "good temperament," what is the particular combination of these characteristics necessary to a working dog? There again we had plenty to learn. In the course of our experiment to date we have taught dogs to do many different kinds of work. Of these five chief types are:

Police work which includes obedience, nose work in the searching of lost objects and man-work including attack.

Trailing work for the police which may mean following a human trail or an animal trail, obedience but not man work. It is interesting to note that about 80% of the trails made by trailing dogs in police service are non-criminal but are for persons lost or who have committed suicide.

Blind guides.

Army messenger dogs which includes all forms of messenger service under fire, messages, laying telephone wire, carrying ammunition or rations, carrying messenger pigeons in the opposite direction to their line of flight, etc. (called "Liaison" in Table I).

Companion dogs, which includes all those dogs which have gone into private homes as companions, pure and simple.

When the dogs which have made good at the various lines of work are listed together and then the means and standard deviations of their various characteristics computed we find that the "patterns" of temperament differ for the line of work demanded. This difference is, we feel, a true difference, for many dogs have been tried for one line of work, failed, and then succeeded in some other line of work. After all, this is not so astonishing for we could not think it possible for all girls to be good stenographers nor would we look for the same type of mental pattern in girls expert in various lines of work. The temperament patterns are shown in Table I. This table shows the average score for each characteristic for all dogs which were trained to and succeeded in the five major divisions of work. In all classes of work and in most of the characteristics there was a wide variation of scores which succeeded so that the averages alone do not tell the story. For this reason the mean is given, together with the range in score obtained by adding and subtracting the standard deviation from the average or mean. This range will include two-thirds of the dogs which are included in any class, and the importance of each characteristic and its score requirements for the work are to be judged by the narrowness of this range.

A wide range in sensitivity is found in dogs employed in different types of work. Police work demands the least sensitive, probably as a result of the police dog having to go against harder blows and more gun fire at short range than any of the other

workers. In nose work it is interesting to note that, while the trailing dog demands the best, as might be expected, the blind leader falls in the lowest class. This is not as strange if we remember that a dog really sees a lot with his nose and the dog which would be continually distracted by alluring scents would not be a dependable and safe guide for a sightless master.

Trailing is the one line of work where there can be no insistence, no pushing forward on the lines. The master cannot know where the trail is and the dog follows it because he wants to or he does not work. For this reason, perhaps, we find trailing demanding more willingness than any other line of work. An energetic, non-lazy type of dog seems demanded for any line of work if he is to give satisfaction. All types of work show a mean for self-right, which indicates willingness to give the right of way, with the exception of police work. The greatest confidence is necessary for the blind leader who must make the decision, often in heavy traffic, when her master cannot possibly know the right move nor the correct command to give.

Sharpness, fight, and protection seem to be the right of the police dog. On the other hand the army communication dog is lowest in the minus class for these qualities for he must not give his message to a stranger nor announce his presence to passers-by whether they be friend or foe.

For the various types of work, therefore, the "intelligence," "temperament" or "Wesen" required may be summarized as follows:

Work	*High degree of*	*Low degree of*
Police	Ear sensitivity (lack of) Self-right Sharpness Fight Protection	Intelligence (possible to use) Willingness (possible to use)
Trailing	Nose Intelligence Willingness	Body sensitivity (possible to use) Confidence (possible to use) Fight
Blind guide	Confidence. (Ear sensitivity must be medium)	Nose
Army communication	Body sensitivity (lack of) Energy	Self-right Sharpness Protection
Companion	The good looking, loveable dog that is willing to give his all and take what his master is in the mood of giving.	

Characteristics		Type of Work				
		Police	Trailing	Blind	Liaison	Companion
Body Sensitivity	M	2.30	2.68	2.31	2.25	2.56
	±σ	1.50 - 3.10	2.51 - 3.25	1.45 - 3.17	1.29 - 3.21	1.66 - 3.46
Ear Sensitivity	M	2.10	2.53	2.56	2.37	2.95
	±σ	1.20 - 3.00	1.28 - 3.78	1.82 - 3.34	1.49 - 3.25	1.98 - 3.92
Nose Use	M	2.36	1.53	2.75	2.33	2.49
	±σ	1.81 - 2.91	1.00 - 2.33	2.00 - 3.50	1.75 - 2.91	1.83 - 3.15
Intelligence	M	2.24	1.82	2.02	1.88	2.08
	±σ	1.45 - 3.03	1.09 - 2.55	1.45 - 2.59	1.68 - 2.08	1.37 - 2.79
Willingness	M	2.41	1.82	2.26	2.19	2.35
	±σ	1.30 - 3.52	1.40 - 2.24	1.41 - 3.15	1.09 - 3.29	1.50 - 3.20
Energy	M	2.32	2.18	2.24	2.00	2.37
	±σ	1.41 - 3.23	1.24 - 3.12	1.33 - 3.15	1.35 - 2.65	1.39 - 3.35
Self-Right*	M	+0.51	−0.35	−0.21	−0.62	−0.60
	±σ	+2.30 - −1.28	+2.18 - −2.98	+1.85 - −2.27	+1.29 - −2.53	+1.72 - −2.92
Confidence	M	2.08	2.72	1.99	2.33	2.47
	±σ	1.32 - 2.84	2.12 - 3.32	1.20 - 2.78	1.26 - 3.40	1.50 - 3.44
Sharpness†	M	+0.82	+0.50	+0.29	−0.40	+0.27
	±σ	+2.26 - −0.62	+2.26 - −1.26	+1.66 - −1.28	+1.54 - −2.34	+1.80 - −1.26
Fight Instinct†	M	+1.16	+0.25	+0.49	+0.50	+0.40
	±σ	+2.44 - −0.12	+0.83 - −0.33	+1.77 - −0.79	+1.32 - 0.32	+1.83 - −1.03
Protective Instinct†	M	+0.65	+0.24	+0.09	−1.20	+0.09
	±σ	+2.29 - −0.99	+2.28 - −1.80	+1.73 - −1.55	+0.37 - −2.77	+1.99 - −1.81

TABLE I. Temperament patterns of dogs which were trained to and succeeded in one type of work. Methods of scoring are described in the text. The standard deviation (σ) measures the variability in behavior. The range shown (±σ) is the range within which two-thirds of the individuals fall.

*Mean is average deviation above or below ideal which is scored 1.

†Mean is average deviation above or below neutral behavior which is scored 1.